

LISTING OF CLAIMS

In the Claims:

The following listing of claims replaces all prior versions and listings of claims in the application.

Listing of Claims:

1–69. (Canceled).

70. (Currently amended) A system for fixing tissue samples, comprising:

a reaction chamber including a solution selected from the group consisting of a fixative, alcohol, xylene and paraffin for immersing a tissue sample therein;

an ultrasound transducer, immersed in said solution, to irradiate the tissue sample, immersed in said solution, with ultrasound energy, wherein said ultrasound transducer is within 2 inches of said tissue sample;

an ultrasound generator, coupled to the ultrasound transducer, to generate the ultrasound energy;

at least one sensor, immersed in the solution, to monitor at least one of a physical parameter of the tissue sample and the ultrasound energy; and

a central processing unit, coupled to the ultrasound generator and the sensor, to control the ultrasound generator by adjusting at least one of a frequency and an intensity of the ultrasound energy, in response to a signal received from the sensor, to fix the tissue sample in the solution with no or minimal damage.

71. (Canceled).

72. (Previously presented) The system of claim 70, wherein said at least one sensor detects a parameter of the sample selected from the group consisting of temperature, size, tissue type, and tissue density.

73. (Previously presented) The system of claim 70, wherein said at least one sensor is selected from the group consisting of an ultrasound sensor, and an infrared temperature sensor.

74. (Previously presented) The system of claim 70, wherein said at least one sensor measures a frequency or an intensity of said ultrasound.

75. (Previously presented) The system of claim 70 wherein said at least one sensor produces signals which are processed by the central processing unit.

76. (Canceled).

77. (Previously presented) The system of claim 70 wherein the transducer generates ultrasound of a frequency of at least 100 KHz.

78. (Previously presented) The system of claim 77 wherein the transducer generates ultrasound of a single frequency or of multiple frequencies in the range 100 KHz to 50 MHZ.

79. (Previously presented) The system of claim 70 wherein the ultrasound transducer produces ultrasound of a power in the range of $0.01\text{--}200\text{ W/cm}^2$.

80–91 (Canceled).

92. (Previously presented) The system of claim 70 wherein the solution is a solution of 10% formalin.

93. (Previously presented) The system of claim 70 wherein the solution is alcohol to dehydrate the tissue sample.

94. (Previously presented) The system of claim 70 wherein the solution is xylene.

95. (Previously presented) The system of claim 70 wherein the solution is paraffin.

96. (Previously presented) The system of claim 70 further comprising a first pump and a second pump, wherein the first pump pumps a second solution into the reaction chamber and the second pump pumps a first solution out of the reaction chamber.

97. (Canceled).

98. (Currently amended) A system for fixing tissue samples, comprising:
a reaction chamber including a solution selected from the group consisting of a fixing agent, a dehydrating agent, a clearing agent and paraffin for immersing a tissue sample therein;

an ultrasound transducer, immersed in said solution, to irradiate the tissue sample, immersed in said solution, with ultrasound energy of at least 100 KHz and a power in the range of 0.01-200 W/cm², wherein said ultrasound transducer is within 2 inches of said tissue sample;

an ultrasound generator, coupled to the ultrasound transducer, to generate the ultrasound energy;

at least one sensor, immersed in the solution, to monitor at least one of a physical parameter of the tissue sample and the ultrasound energy; and

a central processing unit, coupled to the ultrasound generator and the sensor, to control the ultrasound generator by adjusting at least one of a frequency and an intensity of the ultrasound energy, in response to a signal received from the sensor, to fix the tissue sample in the solution with no or minimal damage.

99. (Previously presented) The system of claim 98, wherein the transducer generates ultrasound of a single frequency or of multiple frequencies in the range 100 KHz to 50 MHZ.

100. (Previously presented) The system of claim 99, wherein said at least one sensor detects a parameter of the sample selected from the group consisting of temperature, size, tissue type, and tissue density.

101. (Previously presented) The system of claim 99, wherein said at least one sensor is selected from the group consisting of an ultrasound sensor, and an infrared temperature sensor.

102. (Previously presented) The system of claim 99, wherein said at least one sensor measures a frequency or an intensity of said ultrasound.

103. (Previously presented) The system of claim 99, wherein said at least one sensor produces signals which are processed by the central processing unit.

104. (Previously presented) The system of claim 99 further comprising a first pump and a second pump, wherein the first pump pumps a second solution into the reaction chamber and the second pump pumps a first solution out of the reaction chamber.

105. (Previously presented) The system of claim 77, wherein the transducer generates ultrasound of a single frequency or of multiple frequencies in the range 100 KHz to 1 MHZ.

106. (Previously presented) The system of claim 98, wherein the transducer generates ultrasound of a single frequency or of multiple frequencies in the range 100 KHz to 1 MHZ.

107. (New) The system of claim 70, wherein the transducer includes multiple heads.

108. (New) The system of claim 70, wherein the transducer revolves around the tissue sample.

109. (New) The system of claim 70, wherein the tissue sample rotates.

110. (New) The system of claim 98, wherein the transducer includes multiple heads.

111. (New) The system of claim 98, wherein the transducer revolves around the tissue sample.

112. (New) The system of claim 98, wherein the tissue sample rotates.